HAWAIIAN HAWK SURVEY IN THE PU'U HONUAULA AREA

APRIL - JULY 1986

INTRODUCTION

This report is part of a continuing study to provide baseline data for Environmental Impact Assessments for activities associated with Puna Geothermal Ventures well sites located at Pohoiki, Puna, Hawaii.

Numerous sightings of the endangered Hawaiian Hawk or 'io (*Buteo solitarius*)in the area of the Puna geothermal resource has prompted continued observations of hawks and nests throughout the area. The data provided here adds to the work presented by previous workers.

METHODS

Six days of field work ranging from two to ten hours each were conducted within an area of one mile radius of Pu'u Honuaula Puna, Hawaii, between 28 April and 15 July 1986.

For this survey, a change was made in the census method. Previously, sightings were made as they arose during driving to and from nest observations and while driving throughout the area looking for hawks.

During this years study period two observation sites were chosen with the greatest visibility for hawk sightings. One 15 minute observation period was conducted at each site each field day. With this method, replication of the observations can be conducted each year by any observer. These data will be more accurate and the results easily compared from year to year to determine shifts in the population structure.

All hawks seen during census counts were noted and plotted on maps for home range determination. All other hawks seen were noted as incidental observations. Movements and activities were monitored to determine breeding status and presence of nest sites. Habitats suitable for nest sites were covered on foot.

Approximately two hours each field day were spent observing the only active nest found. Observations of the chick were made from behind a fern blind approximately 40 meters from the nest for minimal disturbance to the hawks.

OBSERVATIONS

A total of 18 Hawaiian hawk sightings were noted in the study area. (Map 1) All sightings at the active nest site are not included in this figure.

This year the greatest concentration of sightings were again noted one half to one mile east of Pu'u Honuaula. The adults from the active nest (nest #2, map 2) spend considerable time searching for prey in the area, which would account for a greater number of occurrences there.

Seven sightings were noted at the Pu'u both of light and dark phase hawks. During one observation in early May, a light phase hawk was seen making short diving and upward gliding movements indicative of breeding behavior. Several minutes later this bird was joined by another also a light phase and both began this prenuptual flight behavior for about 30 seconds before decending behind the Pu'u.

No nests were found during three subsequent searches of Pu'u Honuaula.

Although individual Hawaiian hawks are difficult to distinguish at a distance, color phase and plumage markings are easily distinguishable at close range. One recognizable light phase individual has frequented the Pu'u for three years. It was first observed as a juvenile in 1984 (Stemmermann,1984) and by this observer in 1985 (Jeffrey,1985) and 1986.

During searches of the slopes and interior ofthe pu'u this bird was observedperched in trees and seen flying through the crater numerous times. These data indicate that this light phase hawk is using Pu'u Honuaula as part of its home range.

NEST OBSERVATIONS

No new nests were found in the area and two of the previously found nests (nests 1 and 3, map 2) again show no activity.

Nest 2 on the other hand, was active for the second year in a row.

Observation of the nest on April 28 showed that 8 inches of new nesting material had been added to the nest. The female was at this time incubating an egg. The young hawk hatched between 14 and 23 May, which corresponds to the previous years hatch date, putting the egg laying in mid-April.

Griffin's data (Griffin 1985) shows that generally, Hawaiian hawks do not breed every year. Several factors may have contributed to the success of nest 2; 1. The adults have experience as hunters, 2. They are in an area of high food availability, 3. They have more experience at raising young.

During 18 hours of observation at the nest both parents were noted bringing prey to the nest on 8 occasions. Five prey delivered by the male included one Spotted Munia (Lonchura punctulata), one House Finch (Carpodacus mexicanus), two Japanese White-eyes (Zosterops japonicus), and one House Mouse (Mus musculus). The female was seen with prey on three occasions, one large rat (Rattus rattus sp.) , one House Mouse, and one

Japanese White-eye .

On several occasions, during early morning observations, the female was seen feeding rodents to the young hawk. Apparently , hunting in the early morning hours for rodents, although nocturnal, are still active, provide a good source of prey at this time. Later in the day the pair were only observed to bring in small birds.

HUMAN DISTURBANCE

The active nest, being less than 100 meters from a producing papaya field, is constantly exposed to human disturbance. bulldozers, field workers,and tractors are constantly in the area and in the view of the young and adults. Only when the noise is excessive (the sound of a bulldozer very close or helicopter flying low and over head) do the hawks become agitated, but apparently because of continued human activity they have become, to some extent, habituated to this disturbance.

CONCLUSIONS

Although the number of sightings during this study period are less than last years, this is not an indication of population decline but rather an artifact of a change in census methods.

Data indicates that a light phase Hawaiian hawk is using Pu'u Honuaula as part of its home range. This bird has been observed in prenuptial and pair bonding flight rituals with another hawk over this area. This bird can be expected to nest in the Pu'u Honuaula area during the spring of 1987.

Five to seven adult and juvenile Hawaiian hawks presently utilize the area within one mile radius of Pu'u Honuaulu and becauseof the open nature of this agricultural area and its potential for attracting prey species to discarded fruit and weed seeds, Hawaiian hawks will continue to utilize this area for hunting and nesting.

Although only active nest was found inthe area, the frequency of hawk sightings suggests that the number of suitable nesting sites within the area is limited but hawks are nesting in nearby areas and hunting over the study area.

Although indirect human disturbance was noted to have a minor effect on nestlings, prolonged loud noise or close human contact could be detrimental to the young hawk.

RECOMMENDATIONS

With the only active Hawaiian hawk nest at present being found approximately one mile east of the presently active geothermal well site, and with five to seven hawks using the area for hunting, it is recommended that:

1. Monitoring of Hawaiian hawk populations on a regular basis during breeding and non-breeding periods be continued.
2. Nest surveys and observations should continue to determine breeding success during geothermal well developement and activation.
3. Human interference and disturbance should be kept to a minimum especially during peak incubation and early nestling stages.

LITERATURE CITED

Griffin, C.R. 1985. Biology of the Hawaiian Hawk Buteo solitarius Ph.D. Dissertation. University of Missouri- Columbia.

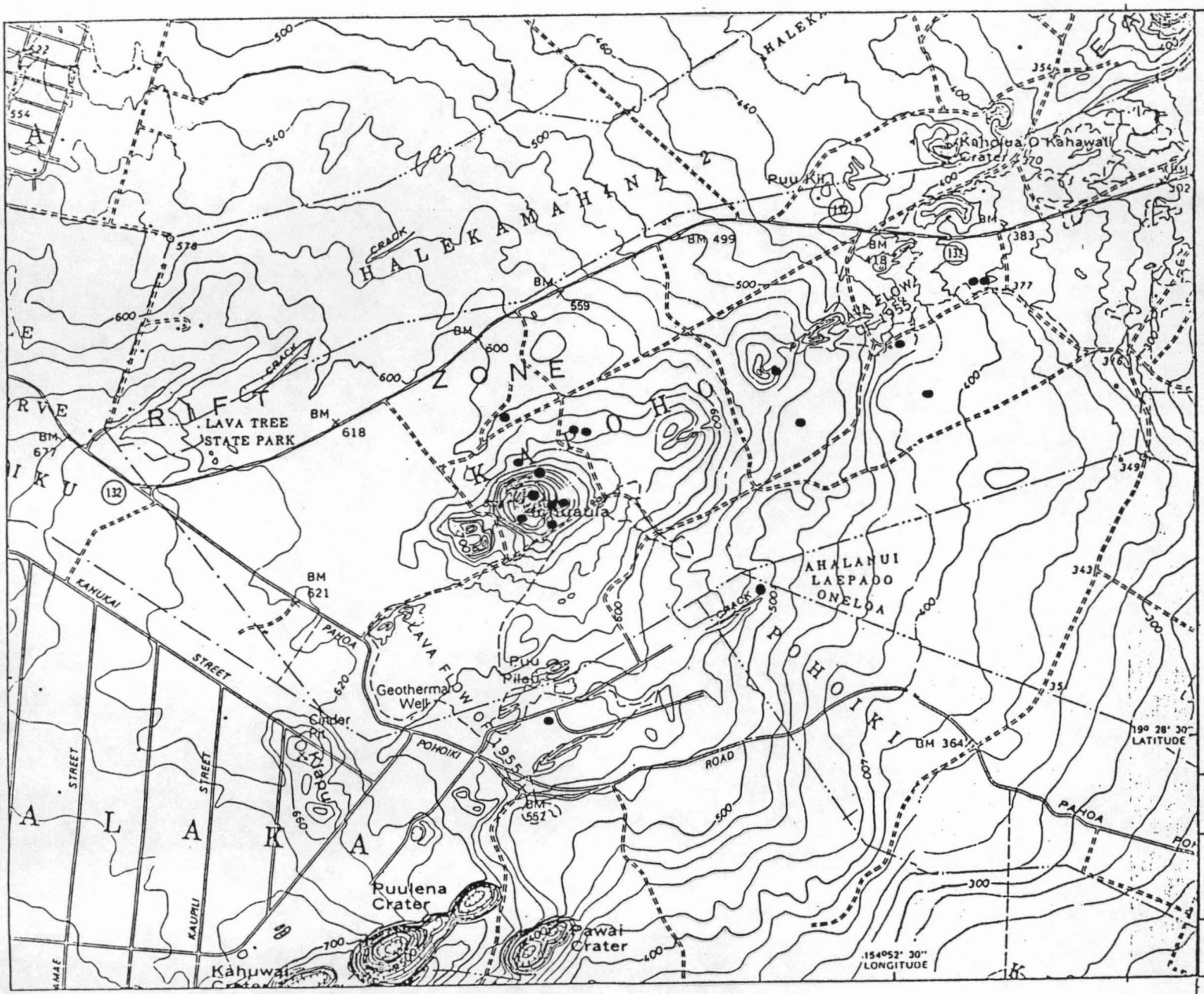
Jeffrey, J. 1986. Hawaiian Hawk Survey in the Pu'u Honuaula area. Prepared for Puna Geothermal Venture/ Thermal Power Company.

Stemmermann, M. 1985. Hawaiian Hawk Nesting Study. Prepared for Puna Geothermal Venture/ Thermal Power Company.

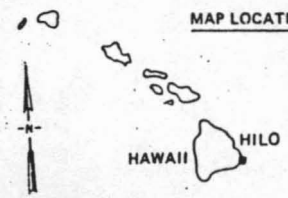
15 minute count sightings

Date	Site #1	Site #2
April 28	DDDD	D
May 14	??LL	(LL)
22	none	D
June 10	L (LD)	L
July 8	L	none
15	L	none

D dark phase
L light phase
? phase unknown
() pair seen together



MAP LOCATION



● HAWK SIGHTING

SCALE
CONTOUR INTERVAL 20 FEET

0 ½ MILE

0 1000 2000 FEET

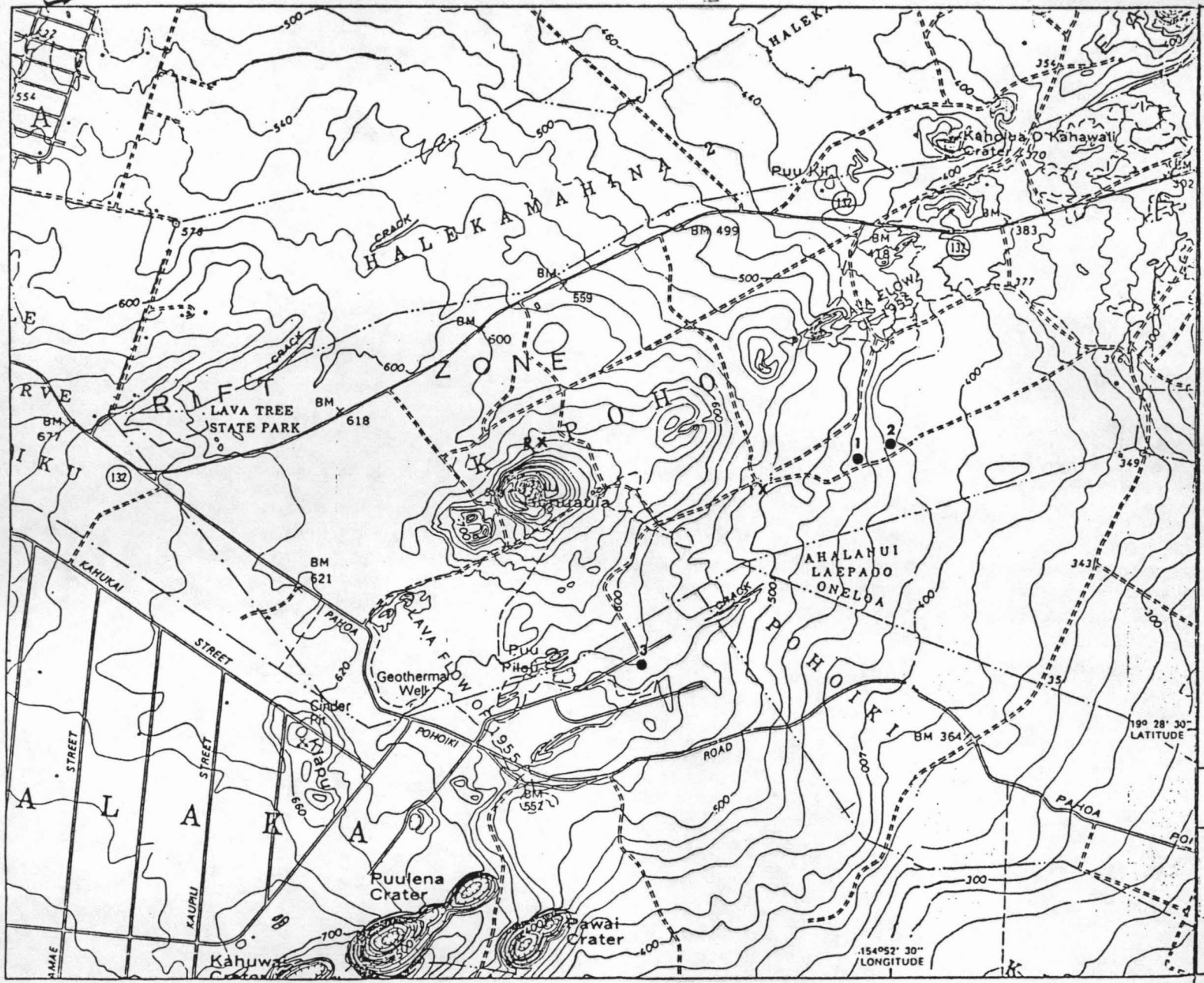
0 1KM

SOURCE: U.S.G.S., 1980, 1981a, 1981b

PUNA
GEOTHERMAL VENTURE PROJECT
HONOLULU, HAWAII

MAP 1
HAWAIIAN HAWK SIGHTINGS
APRIL 28 TO JULY 15, 1986

BECHTEL GROUP INC.	JOB. NO.	DRAWING NO.	REV.
	15722		



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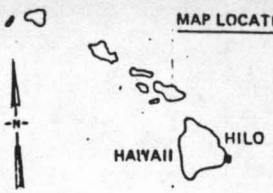

1 ● NEST SITE

X CENSUS SITE

SCALE
CONTOUR INTERVAL 20 FEET

0 ½ MILE

0 1000 2000 FEET

0 1KM

SOURCE: U.S.G.S., 1980, 1981a, 1981b

PUNA
GEOTHERMAL VENTURE PROJECT
HONOLULU, HAWAII

MAP 2
HAWAIIAN HAWK NEST SITES

BECHTEL GROUP INC.	JOB. NO.	DRAWING NO.	REV.
	15722		